REMARKS

Claims 1-44 were pending at the time of the Office action. Claims 1, 37 and 38 are amended. Claims 45 and 46 are newly added. No new matter is added. Accordingly, claims 1-46 are pending in the application.

Telephone Interview

Applicant expresses appreciation to the Examiner (Mr. Yen) for the courtesy of the telephone interview held on August 7, 2008, with Applicants' representatives, Ted Rittmaster (Reg. No. 32,933) and Norman Lee (Reg. No. 58,941).

During the interview, claim 1 was discussed. In addition, the Takoh reference ("Takoh," U.S. Patent No. 4,406,204) was discussed. More specifically, Applicants' representatives explained that the features of claim 1 were not disclosed in Takoh. Applicants' representatives further explained that Takoh did not disclose additional features described, for example, in the drawings of this application.

No agreement was reached on claim 1. It was understood by Applicants' representatives that, because this application was only recently assigned to the Examiner, the Examiner would review the pending claims and the cited art in further depth.

Claim Rejections Under 35 U.S.C. 102

In paragraph 4 of the Office action, claims 1, 2, 4, 5, 19-39 and 41-43 were rejected under 35 U.S.C. 102(b) as being anticipated by Katoh ("Katoh," U.S. Patent No. 4,406,204).

The rejection of these claims is respectfully traversed.

As amended, independent claim 1 recites:

> A vocoder system comprising:

formant detection means for detecting formant characteristics of a first musical tone signal;

musical tone signal input means for inputting a second musical tone signal that corresponds to specified pitch information;

division means for dividing the second musical tone signal into a plurality of frequency bands, the respective center frequencies of which have been fixed;

setting means for setting modulation levels at the fixed center frequency of each of the frequency bands based on the formant characteristics and formant control information with which the formant characteristics detected by the formant detection means are changed; and

modulation means for modulating a level of a signal of each of the frequency bands based on the modulation level set in the setting means. (Emphasis added.)

Applicant is unable to find in Katoh disclosure or suggestion of the noted features of claim 1.

First, Katoh does not disclose or suggest "formant detection means for detecting formant characteristics of a first musical tone signal," as recited in claim 1.

Applicant notes, at the outset, that Katoh apparently is not directed towards a vocoder system. In Katoh's electronic musical instrument, a musical tone is synthesized by controlling harmonic components of a depressed key in accordance with one of various fixed formants. (See Abstract and Col. 1, lines 9-18.) Each fixed formant corresponds to a certain tone color (e.g., a tone color of a piano, a tone color of a human voice, etc.). (See Col. 7. lines 5-13.) Because Katoh is directed towards synthesizing a musical tone in accordance with a fixed formant corresponding to a certain tone color, Katoh does not disclose or suggest "formant detection means for detecting formant characteristics of a first musical tone signal[,]" as recited in claim 1.

In addition, Katoh does not disclose or suggest "division means for dividing the second musical tone signal into a plurality of frequency bands, the respective center frequencies of which have been fixed[,]" as also recited in claim 1.

In paragraph 5 of the Office action, the Examiner apparently contends that Katoh's Table 1 discloses the noted features. Applicant respectfully disagrees.

The cited Table 1 contains frequency numbers of keys of the musical instrument. (See Col. 8, lines 18-21.) The frequency numbers represent tone pitches of the keys in units of cents, with the tone pitch of the lowest key (C_2) being used as a reference point (zero cent). (See Col. 8, lines 24-27.) Applicant respectfully submits that the above-described disclosure of keys and tone pitches (in units of cents) does not disclose or suggest "division means for dividing the second musical tone signal into a plurality of frequency bands, the respective center frequencies of which have been fixed[,]" as recited in claim 1.

In contrast, Katoh discloses that, in its electronic musical instrument, center frequencies of the fixed formants are modified. For example, Katoh discloses that a center frequency of a fixed formant is modified to a nearest harmonic frequency of a tone corresponding to the depressed key. Katoh further discloses that a tone is synthesized based on a formant having the modified center frequency as the central component. (See Col. 2, lines 53-60.) (See also FIG. 2, in which the fixed formant having a center frequency f_f (solid-line curve) is modified to a formant having a modified center frequency of kf_o (dotted-line curve)). Because Katoh teaches modifying center frequencies of fixed formants, Katoh does not disclose or suggest "division means for dividing the second musical tone signal into a plurality of frequency bands, the respective center frequencies of which have been fixed[,]" as recited in claim 1.

Furthermore, because Katoh teaches modifying center frequencies of fixed formants, Katoh further does not disclose or suggest ". . . setting means for setting modulation levels at the fixed center frequency of each of the frequency bands based on the formant characteristics and formant control information with which the formant characteristics detected by the formant detection means are changed[,]" as also recited in claim 1. (Emphasis added.)

At least for the reasons explained, claim 1 is not anticipated by Katoh.

At least because claims 2, 4, 5, 19-36 and 41-43 depend from claim 1, Applicant respectfully submits that these dependent claims are not anticipated by Katoh.

As amended, independent claim 37 recites:

> A method for generating a musical signal comprising:
>
> detecting formant characteristics of a first musical tone signal;
>
> inputting a second musical tone signal that corresponds to specified pitch information;
>
> dividing the second musical tone signal into a plurality of frequency bands, the respective center frequencies of which have been fixed;
>
> setting modulation levels at the fixed center frequency of each of the frequency bands based on the formant characteristics and formant control information with which the formant characteristics detected by the formant detection means are changed; and
>
> modulating a level of a signal of each of the frequency bands based on the modulation level. (Emphasis added.)

At least for reasons similar to those presented with respect to independent claim 1, Applicant respectfully submits that independent claim 37 is not anticipated by Katoh.

As amended, independent claim 38 recites:

> A vocoder system comprising:
>
> a formant detector for detecting formant characteristics of a first musical tone signal;
>
> an input device for inputting a second musical tone signal that corresponds to specified pitch information;
>
> a divider connected to the input device for dividing the second musical tone signal into a plurality of frequency bands, the respective center frequencies of which have been fixed;

a level setter for setting modulation levels at the fixed center frequency of each of the frequency bands based on the formant characteristics and formant control information with which the formant characteristics detected by the formant detection means are changed; and

a modulator for modulating a level of a signal of each of the frequency bands based on the modulation level set in the level setter. (Emphasis added.)

At least for reasons similar to those presented with respect to independent claim 1, Applicant respectfully submits that independent claim 38 is not anticipated by Katoh.

At least because claim 39 depends from claim 38, Applicant respectfully submits that this dependent claim is not anticipated by Katoh.

Claim Rejections Under 35 U.S.C. 103

In paragraph 7 of the Office action, claims 3, 6-9 and 40 were rejected under 35 U.S.C. 103(a) as being unpatentable over Katoh and further in view of well-known prior art.

In paragraph 8 of the Office action, claims 10-18 and 44 were rejected under 35 U.S.C. 103(a) as being unpatentable over Katoh and further in view of Suzuki et al. ("Suzuki," U.S. Patent No. 5,691,496).

The rejections of the above claims are respectfully traversed.

Claims 3 and 6-9 depend from claim 1, and claim 40 depends from claim 38. As previously explained, claims 1 and 38 are not anticipated by Katoh. It is believed that well-known prior art does not supply features of claim 1 and 38 explained to be missing from Katoh. Therefore, Applicant respectfully submits that claims 3, 6-9 and 40 are not unpatentable over Katoh and further in view of well-known prior art.

Claims 10-18 and 44 depend from claim 1. As previously explained, claim 1 is not anticipated by Katoh. It is believed that Suzuki does not supply features of claim 1 explained to be missing from Katoh.

Furthermore, as previously explained in Applicant's Amendment of December 6, 2007, Suzuki teaches away from certain features of the embodiment claimed in claim 1. In addition, as also previously explained in Applicant's Amendment of December 6, 2007, Suzuki does not disclose or suggest features recited in claims 10-18.

At least for the reasons explained, it is believed that claims 10-18 and 44 are patentable over Katoh and further in view of Suzuki.

New Claims 45 and 46

New claims 45 and 46 depend from claim 1. At least for this reason, it is believed that these claims are patentable over the cited art.

Further, new claim 45 recites: ". . . wherein the center frequencies of the modulated signals of the frequency bands are equal to the respective center frequencies of the frequency bands, as fixed by the division means." Support for this feature can be found, for example, in paragraph [0049] on pages 10-11 and FIGs. 7(a) and 7(d) of the present application.

Further, new claim 46 recites: ". . . wherein the first musical tone signal is a speech signal." Support for this feature can be found, for example, in paragraph [0038] on page 7 of the present application.

It is believed that each of the features noted above further distinguish the claimed invention over the cited art.

Concluding Remarks

Applicant believes that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by the credit card payment instructions in EFS-Web being incorrect or absent, resulting in a rejected or incorrect credit card transaction, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

Date 8-8-08

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